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SCOTIA COLLECTIONS.—ON *Decalopoda australis*, EIGHTS—AN OLD PYCNOGONID REDISCOVERED.

BY

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VII. *Scotia Collections.—On* Decalopoda australis, *Eights—an old Pycnogonid rediscovered.* By T. V. Hodgson, Biologist to the National Antarctic Expedition. [Plates III. and IV.]

(Received 17th January 1905 ; read 23rd January 1905.)

Among the Pycnogonids collected in M'Murdo Bay by the "Discovery" were several individuals having a pair of ambulatory appendages more than those hitherto allotted to the group. It was thought that this find was of sufficient interest to justify its immediate publication to the zoological world, so a description of this exceptional species was accordingly sent to the *Annals and Magazine of Natural History* for last December. Having heard that Mr W. S. Bruce, of the Scottish National Antarctic Expedition, had also secured a Pycnogonid with five pair of legs, I, somewhat rashly perhaps, hazarded the suggestion that it might prove to be the same species,—a wide distribution of South Polar species is suspected, and to a considerable extent realised. Soon after the publication of that paper, Mr W. S. Bruce very kindly handed me his collection of Pycnogonids for description. I received them on 9th December, and at once perceived that his species was a far finer and more interesting one than that taken by the "Discovery," and therefore its examination was undertaken forthwith. At the same time a single specimen of a *Pentanymphon* was found among a large number of an, as yet, undetermined species of *Nymphon* from Station 325 Scotia Bay, South Orkneys. Notwithstanding certain differences, I am not at present prepared to regard this individual as specifically distinct from *P. antarcticum.* The body is more robust than the average specimens from M'Murdo Bay, and the walking legs shorter. The proportions of the various joints is apparently the same as in the type species, the tarsus and propos being, however, sub-equal in length. These two joints vary in size on the different appendages of the specimen, one of which is smaller than the rest. The denticulate spines of the ovigerous legs present some probable differences from

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the type, but are so much worn as to be utterly useless as a specific character. When examined under a compound lens, the body appears to be minutely scabrous; but this is true of the M'Murdo Bay specimens, though in a less pronounced and varying degree.

While at the Natural History Museum in London, my friend Dr W. T. Calman drew my attention to a communication by James Eights, M.D., to the *Boston Journal of Natural History*, vol. i., 1837, concerning a certain *Decalopoda australis*. On looking up the paper, I at once recognised the species as identical with that taken by the Scottish Expedition. Eights' description, generic and specific, is here republished verbatim, and my own, which is taken from the recently-captured specimens from the South Orkneys, follows and is at greater length.

"Genus **Decalopoda.**

"*Thorax.* Elliptical, composed of five segments, separated from each other by slightly impressed articulations; anterior one produced into a head-like process. Contracted behind, and having on its superior surface a sub-conic tubercle with two eyes placed on each side; segments terminated at each extremity by a tubular joint, to which are attached ten perfect legs. *Rostrum* longer than the thorax, tubular, clavate, arcuated downward, with a triangular aperture at its apex; inserted into the anterior portion of the head-like process below. *Chelicerœ* rather longer than the rostrum, inserted on each side of its base, above, bi-articulate, and terminated by a forceps composed of a finger and thumb, much curved, and meeting only a short distance along their tips, the superior finger alone movable. *Palpi* setaceous, ten-jointed, longer than the rostrum, inserted beneath the cheliceræ. *Egg-bearing organs* attached to a process at the base of the palpi, ten-jointed, with a terminal incurved nail. *Legs* cylindrical, composed of a three-jointed coxa, one-jointed femur, and a two-jointed tibia and tarsus, the latter terminated by a simple, slightly curved claw. *Abdomen?* attached to the posterior segment of the thorax by a

movable articulation, small, sub-clavate, and perforated at its extremity by an anal incision.

"**D. australis.**

"Entire animal of a bright scarlet; disc of the thorax convex, beneath slightly so; on the superior surface of the tubular joints, near the margin, are situated about four very small rigid spines; basal joint of the cheliceræ elongated. *Palpi* with the third and fifth joints elongate, the former of greater length than the latter. *Egg-bearing organs* with the three first joints small and sub-equal, fourth and sixth elongate, the remainder nearly equal; the four terminal joints are prehensile, and have their inner margins dentated, the teeth arranged in about four longitudinal rows. *Legs* long and nearly equal, posterior pair rather smaller; joints of the coxæ short and sub-equal. Thighs about twice the length of the coxæ, furnished with small spines at their superior extremity. The first joint of the tibia equal in length to the thigh, the other rather longer. *Tarsi* as long as the thigh; the last joint of the tibia and those of the tarsi, each armed at their extremities beneath, with four rigid spines. *Eyes* very small. *Teguments* pergamineous. *Habitat.* Sea in the vicinity of the New South Shetland Islands."

I have summarised the foregoing characters as follows, without, it is hoped, losing any of the essential points. The setaceous character of the palps is the only feature in which the South Orkney specimens do not agree with those of the South Shetlands.

Genus **Decalopoda**, Eights.

Body, including lateral processes, elliptical, smooth, not always distinctly segmented, with five pair of ambulatory appendages; cephalic portion wide, with a constricted neck.

Proboscis—longer than the body, clavate, bent downwards.

Abdomen—Long, slender, sub-clavate.

Mandibles—Three-jointed, chelate, well developed.

Palps—Ten-jointed.

Ovigerous legs—Ten-jointed, terminating in a claw, the last four joints with several rows of non-denticulate spines.

Decalopoda australis, Eights.

Body with a group of three or four very small, rigid spines upon the dorsal surface of the lateral processes.

Proboscis—Minute spines irregularly distributed over dorsal surface.

Mandibles—Base of chelæ very short, fingers much curved and devoid of teeth.

Palps—The third joint is considerably the longest; the three terminal joints are sub-equal and shorter than the seventh.

Walking legs smooth, with a few small spines at the distal extremity of the joints. The second tibia is the longest joint, the first being only a little shorter, and the femur a little shorter still.

In comparing the South Orkney specimens with Eights description, one is struck by the accuracy of that naturalist; but, according to modern requirements, some small points have been overlooked.

First with regard to colour, Eights describes his specimens as being bright scarlet, and the body and coxæ of the figure have been so coloured. The South Orkney specimens, after being in spirit for more than a year, do not show any trace of such a colour. Some of the specimens are an extremely light straw colour, without any trace of pigment except in one or two cases, where a little is irregularly distributed at the extremity of the proboscis. Other specimens are a rich olive-brown colour, which is considerably darker on the proboscis, mandibles, and palps. In one specimen, the extremities of some of the legs are equally darkly pigmented. The colour notes taken at the time, and which have been forwarded to me, show that some of the specimens were bright scarlet as Eights describes them, others were a very dark red, and in the latter case the proboscis is almost black. The scarlet colour appears to be uniformly distributed over the body and limbs, the proboscis and adjacent parts being darker than the rest.

One specimen shows a distinct segmentation, two others show it very indistinctly, and the remainder not at all.

The cephalon is separated from the rest of the body by a narrow neck, and in the centre of it is a short and stout ocular tubercle, with four well-developed eyes.

The proboscis is longer than the body, exclusive of the abdomen, but not so long as the two together. It is much swollen just beyond the middle, where it bends downwards at a considerable angle. The mouth is small.

Along the middle line of the proboscis is a narrow band of small spines which can hardly be said to have a regular arrangement. More laterally, there are two or three rows of spines not always well defined; the inner one comprises several spines, the outer one may comprise only one or two. On the whole, these are larger than the spines of the median band. There may be one or two spines on the ventral surface just behind the bend.

The mandibles are well developed and three-jointed. They arise from the wide extremity of the cephalon at the sides of the proboscis. The first joint is long, reaching almost to the beginning of the median enlargement of that organ; the second joint is very small, and constitutes the angle in the direction of the appendage—seen from the side, its dorsal margin presents a sinuous outline, and its distal extremity is very deep. The chela is articulated near the ventral angle, and lies close underneath the first joint. The hand is very small, both fingers are slender and much curved, like a pair of calipers, the lips overlap. There is no trace of teeth, nor are there any setæ on the appendage.

The ten-jointed palps rise on the ventral surface of the body close against the proboscis.[1] The first two joints are very short and wide; the third is considerably the longest of the series; the fourth is quite small; the fifth is long, slightly constricted about two-thirds of its length—this and the sixth are together equal in length to the third; the seventh is a little longer than the sixth; and the remaining three are sub-equal in length, each one being more slender

[1] It is doubtful if the first is really a joint or a process of the body.

than the preceding one. In none of the specimens are the palps setaceous, and this is the discrepancy between Eights' description and these South Orkney examples.

The ovigerous legs rise from a small outgrowth of the ventral surface of the body immediately behind the palps, and nearer to the middle line. The first three joints are quite small; the fourth is long, and only a little shorter than the sixth; the fifth is about half the length, and, as with the fourth, its distal diameter is greater than the proximal, it is also somewhat curved. The four terminal joints are sub-equal in length, bent on each other to form a loop which is so characteristic of the genus *Colossendeis*. Each joint is furnished with four rows of non-denticulate spines, though on the terminal joint these spines are less regularly arranged, and a fifth row may be distinguished. The spines vary a good deal in form and size, the larger ones are trenchant blades, bent rather close against the surface from which they spring.

Of the three coxæ, the first is by a little the shortest and the middle one is the longest, but these differences are very small. The first coxæ bears both dorsally and ventrally at its distal extremity a narrow and shallow groove which runs along the greater part of the joint; this groove is rendered conspicuous by a deeper colour, and its distal extremity is marked by a very short, stout spine. The other coxæ have a similarly coloured line laterally, and this is continued right to the extremity of the limb.

The limbs are quite smooth, and, except a few spinous setæ at the extremity of the joints, do not present any peculiar features. In point of size the difference is hardly noticeable without measurement. The fifth leg is the smallest, the first comes next, and the fourth is intermediate between the third and fifth. The second and third are sub-equal, and the largest.

The proportion of the various joints is approximately the same, variation being confined to very narrow limits.

The second tibia is the longest joint of the appendage, the first being a trifle shorter, the femur a little shorter still.

The tarsus is longer than the propos, but the two together are shorter than the femur.

On the dorsal extremity of the femur are five minute spines, one median, and a pair on each side separated from the median one by a considerable interval. On the first tibia there are no spines at all, but traces of them exist in one specimen.

On the second tibia, and the tarsus at the distal extremity, are two pairs of long spines situated ventro-laterally. A pair of spines exists at the extremity at the propos underneath the claw.

All these spines are tolerably regular in their occurrence, but one may be absent or reduced in size, and an additional one may be present. The median spine on the ventral surface of the three terminal joints is advantageously missing, but this turns up in one or two instances.

The generic differences between *Pentanymphon* and *Decalopoda* are too obvious to need special mention. *Pentanymphon*, without the extra pair of legs, could hardly be separated from *Nymphon* except by a series of minute characters which seems to find favour at the present day. *Decalopoda*, on the other hand, is distinct from all known genera, but is most nearly allied to *Colossendeis*. The well-developed three-jointed mandibles separate it sharply. The palps, more particularly the ovigerous legs, together with the ill-defined segmentation of the body, place it unquestionably in close relation to that genus.

Fifteen specimens of this interesting species were taken at Station 325 between May and August 1903, in 9 to 10 fathoms, Scotia Bay, South Orkney Islands.

Eights says: "They are to be found in considerable numbers in connection with the fuci thrown up by the waves along the shores of the islands, after being detached by the motion of the large masses of ice, from the bottom of the sea."

He further speaks of having obtained many specimens, all being furnished with "egg-bearing organs."

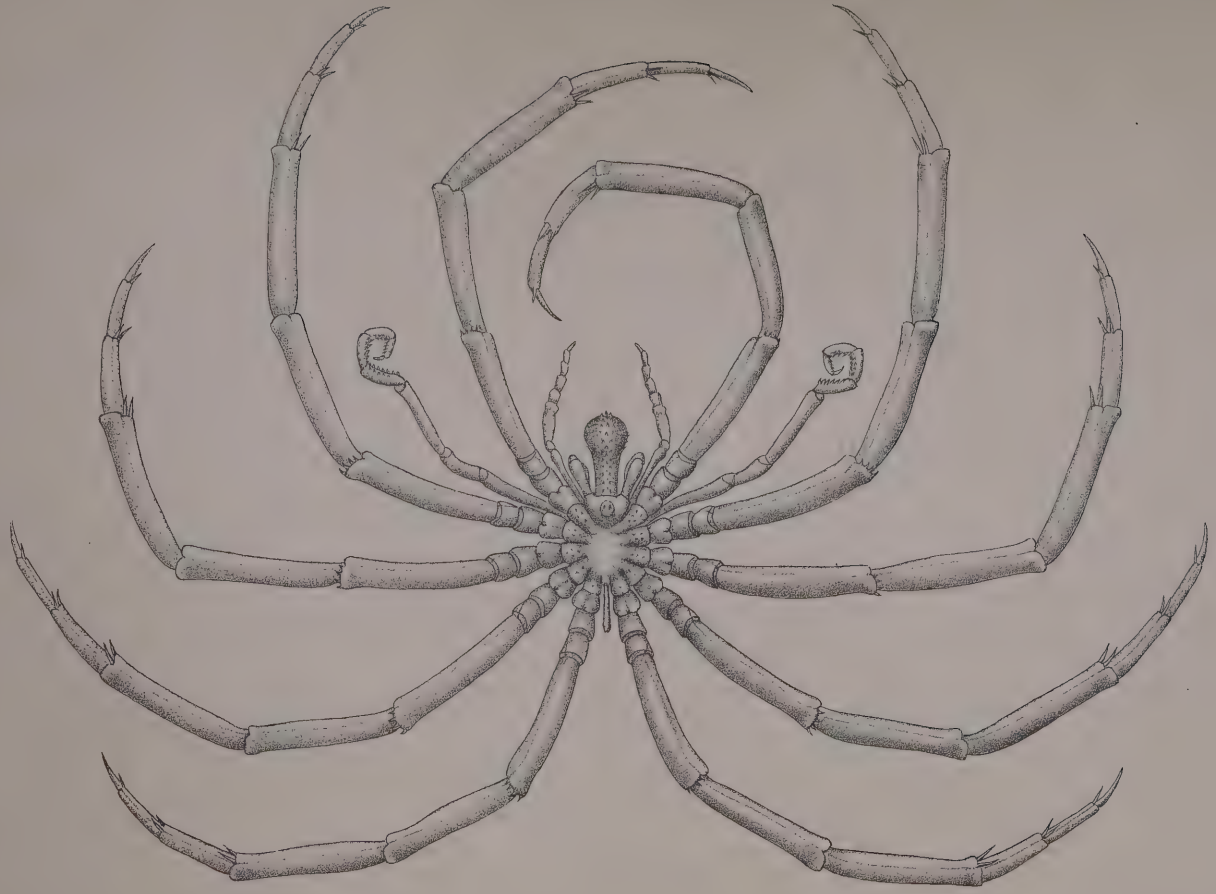
My best thanks are due to Mrs L. E. Sexton for the great

care and skill she has displayed in the preparation of the drawings. I am also indebted to the Council of the Marine Biological Association for accommodation at their Plymouth Laboratory during the examination of certain of the South Polar Collections.

References.

Eights, J., "Description of a New Animal belonging to the Arachnides of Latreille, discovered in the sea along the shores of the New South Shetland Islands," *Boston Jour. Nat. Hist.*, vol. i., 1837, pp. 203-6. 1 Plate.

Hodgson, T. V., "On a new Pycnogonid from the South Polar Regions," *Ann. and Mag. Nat. Hist.*, ser. 7, vol. xiv., 1904, pp. 458-462. 1 Plate.



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DECALOPODA AUSTRALIS EIGHTS. Natural Size.

Fig. 1.

MANDIBLE. × 6

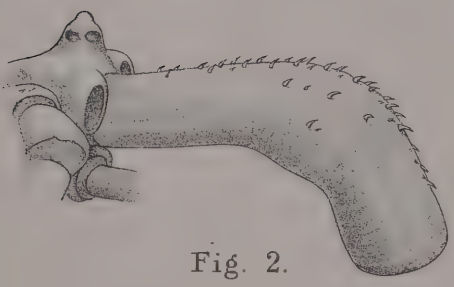

Fig. 2.

PROBOSCIS FROM RIGHT SIDE. × 4

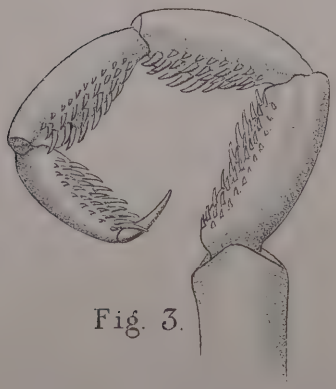

Fig. 3.

OVIGEROUS LEG, DISTAL EXTREMITY. × 6

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